

```

=> s propylene oxide and cumene hydroperoxide and cumene
    195995 PROPYLENE
    1851201 OXIDE
    36862 PROPYLENE OXIDE
        (PROPYLENE(W)OXIDE)
    17931 CUMENE
    34206 HYDROPEROXIDE
    7566 CUMENE HYDROPEROXIDE
        (CUMENE(W)HYDROPEROXIDE)
    37 CUMEME
L1      0 PROPYLENE OXIDE AND CUMENE HYDROPEROXIDE AND CUMEME

=> s propylene oxide and cumene hydroperoxide and cumene
    195995 PROPYLENE
    1851201 OXIDE
    36862 PROPYLENE OXIDE
        (PROPYLENE(W)OXIDE)
    17931 CUMENE
    34206 HYDROPEROXIDE
    7566 CUMENE HYDROPEROXIDE
        (CUMENE(W)HYDROPEROXIDE)
    17931 CUMENE
L2      162 PROPYLENE OXIDE AND CUMENE HYDROPEROXIDE AND CUMENE

=> s 12 and alpha-methylstyrene
    1754095 ALPHA
    21521 METHYLSTYRENE
    14509 ALPHA-METHYLSTYRENE
        (ALPHA(W)METHYLSTYRENE)
L3      27 L2 AND ALPHA-METHYLSTYRENE

=> s 13 and dehydrat? and hydrogenat?
    150908 DEHYDRAT?
    287487 HYDROGENAT?
L4      20 L3 AND DEHYDRAT? AND HYDROGENAT?

=> s 14 and cumyl alcohol
    3559 CUMYL
    284079 ALCOHOL
    170 CUMYL ALCOHOL
        (CUMYL(W)ALCOHOL)
L5      20 L4 AND CUMYL ALCOHOL

=> s 14 and propylene
    195995 PROPYLENE
L6      20 L4 AND PROPYLENE

=> s 16 and py<2003
    22929631 PY<2003
L7      0 L6 AND PY<2003

=> s 16 and py<2004
    23980128 PY<2004
L8      0 L6 AND PY<2004

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=> d 16 20 ibib abs hitstr

L6 ANSWER 20 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:565178 CAPLUS
 DOCUMENT NUMBER: 141:106257
 TITLE: Process for preparation of cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan
 SOURCE: PCT Int. Appl., 14 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|------------------|------------|
| WO 2004058667 | A1 | 20040715 | WO 2003-JP16074 | 20031216 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MM, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2004250430 | A | 20040909 | JP 2003-197750 | 20030716 |
| AU 2003289103 | A1 | 20040722 | AU 2003-289103 | 20031216 |
| EP 1598330 | A1 | 20051123 | EP 2003-778947 | 20031216 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| CN 1732139 | A | 20060208 | CN 2003-80107455 | 20031216 |
| US 2006183926 | A1 | 20060817 | US 2005-540029 | 20050622 |
| US 7319177 | B2 | 20080115 | | |
| PRIORITY APPLN. INFO.: | | | JP 2002-371731 | A 20021224 |
| | | | JP 2003-197750 | A 20030716 |
| | | | WO 2003-JP16074 | W 20031216 |

OTHER SOURCE(S): CASREACT 141:106257

AB This invention pertains to a method for producing cumene, characterized by subjecting cumyl alc. and hydrogen to the action of a dehydration catalyst to obtain a mixture comprising the . alpha.-methylstyrene and water generated and hydrogen and subjecting the mixture to the action of a hydrogenation catalyst. By this method, cumyl alc. was converted to cumene with 99% selectivity. This invention provides an efficient method to make cumene at low cost.

=> d 16 1-19 ibib abs hitstr

L6 ANSWER 1 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322796 CAPLUS
 DOCUMENT NUMBER: 142:355729

TITLE: Manufacture of propylene oxide
using cumene
INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097214 | A | 20050414 | JP 2003-335334 | 20030926 |
| PRIORITY APPLN. INFO.: | | | JP 2003-335334 | 20030926 |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) reaction of the hydroperoxide-containing cumene solution with excess propylene in the presence of solid catalysts to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene into cumene in the presence of solid catalysts and recycling to the process 1, wherein cyclohexanol is removed from the reaction system during or between the above processes. The method enables repeated use of cumene and prevention of reaction volume decrease and organic acid formation caused by cyclohexanol.

L6 ANSWER 2 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:322795 CAPLUS
DOCUMENT NUMBER: 142:392811
TITLE: Process for manufacturing propylene oxide
INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097213 | A | 20050414 | JP 2003-335333 | 20030926 |
| PRIORITY APPLN. INFO.: | | | JP 2003-335333 | 20030926 |

AB The title process comprises the following steps. Oxidation step : cumene hydroperoxide is obtained by oxidation of cumene. Epoxidn. step : propylene oxide and cumyl alc. are obtained by reaction of cumene hydroperoxide with propylene in the liquid phase in the presence of a solid catalyst. Dehydration step : .alpha.-methylstyrene is obtained by dehydration of the cumyl alc. obtained in the epoxidn. step in the presence of a solid catalyst. Hydrogenation step : cumene is obtained by hydrogenating the .alpha.-methylstyrene in the

presence of a solid catalyst and the resulting cumene is recycled to the oxidation step. Isopropylcyclohexane removal step : isopropylcyclohexane is removed during or between the above steps. The title method reduces the formation of unnecessary organic acids and peroxides.

L6 ANSWER 3 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322794 CAPLUS
 DOCUMENT NUMBER: 142:355728
 TITLE: Manufacture of propylene oxide
 using cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097212 | A | 20050414 | JP 2003-335332 | 20030926 |
| PRIORITY APPLN. INFO.: | | | JP 2003-335332 | 20030926 |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) epoxidn. of propylene by the hydroperoxide to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene into cumene in the presence of solid catalysts and recycling to the process 1, wherein concentration of ethylbenzene in the recycled cumene solution is ≤10%. The method enables repeated use of cumene and prevention of reaction volume decrease caused by ethylbenzene.

L6 ANSWER 4 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322777 CAPLUS
 DOCUMENT NUMBER: 142:392810
 TITLE: Process for manufacturing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097186 | A | 20050414 | JP 2003-333155 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333155 | 20030925 |

AB The title process comprises the following steps : (1) oxidation step : oxidation

of cumene into cumene hydroperoxide; (2) epoxidn. step : epoxidn. of propylene by cumene hydroperoxide to give propylene oxide and cumyl alc.; (3) dehydration step : dehydration of cumyl alc. in the presence of a solid catalyst to give .alpha.-methylstyrene; (4) hydrogenation step : hydrogenation of .alpha.-methylstyrene into cumene in the presence of a solid catalyst and recycling of cumene to the oxidation step (1); (5) cumene dimer removal step : cumene dimer is removed during or between the above steps. The title process enables the repeated use of cumene and prevents clogging troubles in the system.

L6 ANSWER 5 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322776 CAPLUS
 DOCUMENT NUMBER: 142:392809
 TITLE: Process for manufacturing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097183 | A | 20050414 | JP 2003-333152 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333152 | 20030925 |

AB In the title process comprising the steps shown below, the concentration of sodium ions in the solution containing cumene hydroperoxide supplied to the epoxidn. step is ≤ 1000 weight ppm. (1) Oxidation step : oxidation of cumene into cumene hydroperoxide; (2) epoxidn. step : epoxidn. of propylene by cumene hydroperoxide to give propylene oxide and cumyl alc.; (3) dehydration step : dehydration of cumyl alc. in the presence of a solid catalyst to give .alpha.-methylstyrene; (4) hydrogenation step : hydrogenation of .alpha.-methylstyrene into cumene in the presence of a solid catalyst and recycling of cumene to the oxidation step (1). An addnl. claim specifies that the above process includes a step in which sodium ions are removed during or between the above steps. The title process maintains the high activity of the epoxidn. catalyst.

L6 ANSWER 6 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322775 CAPLUS
 DOCUMENT NUMBER: 142:355724
 TITLE: Manufacture of propylene oxide using cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097181 | A | 20050414 | JP 2003-333150 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333150 | 20030925 |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) epoxidn. of propylene by the hydroperoxide to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene into cumene in the presence of solid catalysts and recycling to the process 1, wherein pH of the recycled cumene solution is 5-10. The method enables repeated use of cumene, oxidation of cumene in high yield, and retention of catalyst activity in the epoxidn.

L6 ANSWER 7 OF 20 CAPLUS COPYRIGHT 2008 ACS ON STN
 ACCESSION NUMBER: 2005:322774 CAPLUS
 DOCUMENT NUMBER: 142:355723
 TITLE: Manufacture of propylene oxide using cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097180 | A | 20050414 | JP 2003-333149 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333149 | 20030925 |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) reaction of the hydroperoxide with propylene to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene in the presence of solid catalysts and recycling the resulted cumene to the process 1, wherein organic acids are removed during or between the above processes. Cumene is repeatedly used as an O carrier.

L6 ANSWER 8 OF 20 CAPLUS COPYRIGHT 2008 ACS ON STN
 ACCESSION NUMBER: 2005:322773 CAPLUS
 DOCUMENT NUMBER: 142:392808
 TITLE: Process for manufacturing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Ito, Yoshiaki

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097178 | A | 20050414 | JP 2003-333147 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333147 | 20030925 |

AB In the title process comprising the steps shown below, the concentration of dicumyl peroxide in the solution containing cumyl alc. upon the completion of

the

epoxidn. step is \leq 2000 weight ppm. (1) Oxidation step : cumene hydroperoxide is obtained by oxidation of cumene. (2) Epoxidn. step : propylene oxide and cumyl alc. are obtained by reaction of cumene hydroperoxide (obtained in the oxidation step) with propylene. (3) Propylene separation/recovery/recycling step : the unreacted propylene in the epoxidn. step is separated, recovered, and recycled. (4) Propylene oxide sepn step : after recovery of the unreacted propylene in the epoxidn. step, propylene oxide is separated and recovered. (5) Hydrogenation step : after separation of propylene oxide, the cumyl alc. in the reaction mixture is hydrogenated to cumene and the resulting cumene is recycled to the oxidation step. The title process decreases the loss of cumene.

L6 ANSWER 9 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322771 CAPLUS
 DOCUMENT NUMBER: 142:392806
 TITLE: Process for manufacturing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Nakayama, Toshio
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097175 | A | 20050414 | JP 2003-333144 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333144 | 20030925 |

AB Propylene oxide is manufactured by : (1) oxidation of cumene into cumene hydroperoxide; (2) epoxidn. of propylene by cumene hydroperoxide to give propylene oxide and cumyl alc.; (3) hydrogenation of cumyl alc. in the presence of a solid catalyst to give cumene and recycling of cumene to the oxidation step (1); (4) removal of C4 hydrocarbons (butane, 1-butene) during or between the above steps. An addnl. claim specifies the dehydration of

cumyl alc. in the presence of a solid catalyst to give .alpha.-methylstyrene and the hydrogenation of .alpha.-methylstyrene into cumene in the presence of a solid catalyst and recycling of cumene to the oxidation step (1). An addnl. claim specifies the hydrogenolysis of cumyl alc. to cumene and recycling of cumene to the oxidation step (1). The title process enables repeated use of cumene, and the epoxidn. of propylene is highly efficient.

L6 ANSWER 10 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:322770 CAPLUS
 DOCUMENT NUMBER: 142:374306
 TITLE: Process for manufacturing propylene oxide
 INVENTOR(S): Yamamoto, Jun; Akutsu, Kazumasa
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097174 | A | 20050414 | JP 2003-333142 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333142 | 20030925 |

AB In the title process comprising the steps shown below, the total concentration of

aldehydes in propylene supplied to the epoxidn. step is \leq 100 weight ppm : (1) epoxidn. step : an excess of propylene is reacted with an organic hydroperoxide (e.g., cumene hydroperoxide) in the liquid phase in the presence of a solid catalyst to give propylene oxide and an alc. (e.g., cumyl alc.), and (2) propylene recovery step : the unreacted propylene in the epoxidn. reaction mixture is separated and recovered, and the recovered propylene is recycled to the epoxidn. step. The title process gives propylene oxide in high yield, and the reactor can be operated over a long period of time.

L6 ANSWER 11 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:315840 CAPLUS
 DOCUMENT NUMBER: 142:355721
 TITLE: Manufacture of propylene oxide using cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

JP 2005097211 A 20050414 JP 2003-335331 20030926
 PRIORITY APPLN. INFO.: JP 2003-335331 20030926

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) epoxidn. of propylene by the hydroperoxide to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene into cumene in the presence of solid catalysts and recycling to the process 1, wherein concentration of phenols in the recycled cumene solution is ≤5%. The method enables repeated use of cumene and prevention of reaction volume decrease caused by phenols.

L6 ANSWER 12 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:315836 CAPLUS
 DOCUMENT NUMBER: 142:355720
 TITLE: Manufacture of propylene oxide using cumene
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|------|----------|-----------------|----------|
| JP 2005097187 | A | 20050414 | JP 2003-333156 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333156 | 20030925 |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) epoxidn. of propylene by the hydroperoxide to give propylene oxide and cumyl alc., (3) dehydration of the alc. in the presence of solid catalysts to give .alpha.-methylstyrene, and (4) hydrogenation of .alpha.-methylstyrene into cumene in the presence of solid catalysts and recycling to the process 1, wherein C2-3 alcs. are removed during or between the above processes. The method enables repeated use of cumene, decrease of reaction volume, and inhibition of organic acid formation.

L6 ANSWER 13 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:300427 CAPLUS
 DOCUMENT NUMBER: 142:355715
 TITLE: Method for producing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|------------|
| WO 2005030745 | A1 | 20050407 | WO 2004-JP13993 | 20040916 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| JP 2005097184 | A | 20050414 | JP 2003-333153 | 20030925 |
| PRIORITY APPLN. INFO.: | | | JP 2003-333153 | A 20030925 |

AB A method for producing propylene oxide comprising the following steps is disclosed wherein the concentration of water in the solution containing cumene hydroperoxide used in the epoxidn. step is ≤ 1 weight% : (1) oxidation step : cumene hydroperoxide is obtained by oxidation of cumene ; (2) epoxidn. step : propylene oxide and cumyl alc. are obtained by reaction of propylene with cumene hydroperoxide (obtained in the oxidation step); (3) dehydration step : .alpha.-methylstyrene is obtained by dehydration of the cumyl alc. (obtained in the epoxidn. step) in the presence of a dehydration catalyst; (4) hydrogenation step : cumene is obtained by hydrogenating .alpha.-methylstyrene in the presence of a hydrogenation catalyst, and this cumene is recycled to the oxidation step. Propylene oxide (I) was prepared with 95% selectivity for 1.

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 14 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:300426 CAPLUS
 DOCUMENT NUMBER: 142:355714
 TITLE: Process for producing propylene oxide
 INVENTOR(S): Tsuji, Junpei; Ito, Yoshiaki
 PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan
 SOURCE: PCT Int. Appl., 13 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2005030744 | A1 | 20050407 | WO 2004-JP13998 | 20040916 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, | | | | |

GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK,
 LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO,
 NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
 AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG

JP 2005097206 A 20050414 JP 2003-335326 20030926
 EP 1681288 A1 20060719 EP 2004-773382 20040916
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK
 CN 1856481 A 20061101 CN 2004-80027821 20040916
 US 2006281935 A1 20061214 US 2006-572878 20060322
 PRIORITY APPLN. INFO.: JP 2003-335326 A 20030926
 WO 2004-JP13998 W 20040916

AB A process for producing propylene oxide comprises an
 oxidation step in which cumene is oxidized to obtain cumene
 hydroperoxide, an epoxidn. step in which the cumene
 hydroperoxide obtained in the oxidation step is reacted with
 propylene to give propylene oxide and cumyl
 alc., and a step in which the cumyl alc. obtained in the epoxidn. step is
 converted to cumene, e.g. by hydrogenolysis, and this
 cumene is recycled to the oxidation step, characterized in that the
 concentration of 1,2-epoxy-2-phenylpropane in the reaction mixture resulting
 from
 the oxidation step is ≤ 1 weight%. The title process is highly
 efficient.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 15 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2005:300425 CAPLUS
 DOCUMENT NUMBER: 142:374305
 TITLE: Process for producing propylene
 oxide
 INVENTOR(S): Tsuji, Junpei; Ishino, Masaru
 PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 14 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2005030743 | A1 | 20050407 | WO 2004-JP13997 | 20040916 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, | | | | |

AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
 EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
 SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
 SN, TD, TG

JP 2005097182 A 20050414 JP 2003-333151 20030925
 PRIORITY APPLN. INFO.: JP 2003-333151 A 20030925

AB A process for producing propylene oxide (comprising an oxidation step in which cumene is oxidized, an epoxidn. step in which the cumene hydroperoxide obtained in the oxidation step is reacted with propylene to give propylene oxide and cumyl alc., and a step in which the .alpha.-methylstyrene obtained in the step of dehydrating the cumyl alc. is hydrogenated into cumene and this cumene is recycled to the oxidation step) is characterized in that the cumene hydroperoxide to be supplied to the epoxidn. step has not been heated to a temperature \geq the temperature $t^{\circ}\text{C}$ represented by the following equation : $t^{\circ}\text{C} = 150 - 0.8 + w$ wherein w is the content of cumene hydroperoxide (weight%) in the solution containing cumene hydroperoxide. The title process inhibits the formation of formic acid which causes the deterioration of the epoxidn. catalyst.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 16 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:300424 CAPLUS

DOCUMENT NUMBER: 142:374304

TITLE: Method for producing propylene oxide

INVENTOR(S): Tsuji, Junpei; Ishino, Masaru

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|------|----------|-----------------|----------|
| WO 2005030742 | A1 | 20050407 | WO 2004-JP13992 | 20040916 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |

JP 2005097185 A 20050414 JP 2003-333154 20030925
 PRIORITY APPLN. INFO.: JP 2003-333154 A 20030925

AB A method for producing propylene oxide is characterized in that the concentration of cumene hydroperoxide in a solution containing cumyl alc. is ≤ 2 weight% at the end of epoxidn.

step. The above method comprises the following steps. Oxidation step: cumene hydroperoxide is obtained by oxidation of cumene. Epoxidn. step: propylene oxide and cumyl alc. are obtained by reaction of cumene hydroperoxide (obtained in the oxidation step) with propylene. Dehydration step: .alpha.-methylstyrene is obtained by dehydration of the cumyl alc. obtained in the epoxidn. step in the presence of a dehydration catalyst. Hydrogenation step: cumene is obtained by hydrogenating the .alpha.-methylstyrene in the presence of a hydrogenation catalyst and the resulting cumene is recycled to the oxidation step. The title method reduces the formation of byproducts following the epoxidn. step.

REFERENCE COUNT: 45 THERE ARE 45 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 17 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:300423 CAPLUS

DOCUMENT NUMBER: 142:374303

TITLE: Process for producing propylene oxide

INVENTOR(S): Tsuji, Junpei; Ishino, Masaru

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------------------|--|----------|------------------|------------|
| WO 2005030741 | A1 | 20050407 | WO 2004-JP13880 | 20040915 |
| W: | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | |
| RW: | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | |
| JP 2005097207 | A | 20050414 | JP 2003-335327 | 20030926 |
| EP 1666474 | A1 | 20060607 | EP 2004-773362 | 20040915 |
| R: | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK | | | |
| CN 1856482 | A | 20061101 | CN 2004-80027831 | 20040915 |
| US 2006293531 | A1 | 20061228 | US 2006-572876 | 20060322 |
| PRIORITY APPLN. INFO.: | | | JP 2003-335327 | A 20030926 |
| | | | WO 2004-JP13880 | W 20040915 |

AB A process for producing propylene oxide comprising the following steps is characterized in that the concentration of methylbenzyl alc. in the solution containing cumene which is recycled to the oxidation step is ≤ 1 weight% : (1) oxidation step : wherein cumene

hydroperoxide (I) is obtained by oxidizing cumene; (2) epoxidn. step : wherein propylene oxide and cumyl alc. are obtained by reacting the cumene hydroperoxide obtained in the oxidation step with propylene; (3) and conversion step : wherein cumene is obtained by conversion of the cumyl alc. (obtained in the epoxidn. step) in the presence of a solid catalyst, and the resulting cumene is recycled to the oxidation step. The oxidation step in the title process is highly efficient : the production rate

of

I in the title process was 6.5 weight%/h.

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 18 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:871147 CAPLUS

DOCUMENT NUMBER: 141:333948

TITLE: Low-cost manufacture of cumene in process of

manufacturing propylene oxide

INVENTOR(S): Ishino, Masaru; Tsuji, Junpei

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| JP 2004292336 | A | 20041021 | JP 2003-85108 | 20030326 |
| PRIORITY APPLN. INFO.: | | | JP 2003-85108 | 20030326 |
| AB | | | | |
| PhCHMe2 is manufactured by catalytic dehydration of materials containing 4-HOCH2C6H4CHMe2, then catalytic hydrogenation of the resulting PhCMe:CH2 with a part of the reaction mixture being returned to the dehydration process. As the dehydration catalyst, activated Al2O3, and as the hydrogenation catalyst, Pd or Cu may be used. | | | | |

L6 ANSWER 19 OF 20 CAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:817832 CAPLUS

DOCUMENT NUMBER: 141:314769

TITLE: Method for producing .alpha.-

methylstyrene

INVENTOR(S): Tsuji, Junpei; Ishino, Masaru

PATENT ASSIGNEE(S): Sumitomo Chemical Company, Limited, Japan

SOURCE: PCT Int. Appl., 10 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|--|------|----------|-----------------|----------|
| WO 2004085351 | A1 | 20041007 | WO 2004-JP3971 | 20040323 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, | | | | |

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

JP 2004292335 A 20041021 JP 2003-85100 20030326

EP 1621527 A1 20060201 EP 2004-722712 20040323

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,

IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

CN 1764616 A 20060426 CN 2004-80007852 20040323

US 2007118004 A1 20070524 US 2005-550058 20050921

PRIORITY APPLN. INFO.: JP 2003-85100 A 20030326

WO 2004-JP3971 W 20040323

AB This document discloses a method for producing .alpha.-methylstyrene wherein .alpha.-methylstyrene is formed from cumyl alc. through dehydration in the presence of active alumina, characterized in that a raw material containing cumyl alc. contains an organic acid (e.g., formic acid, etc.) in a concentration of 10 to 1000 weight ppm. The title method gives high conversion (97%) of cumyl alc., vs. 46% conversion of cumyl alc. in a reference process. Cumyl alc. is obtained in the production of propylene oxide.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT